

**MODIFIED GAIN NON-CAUSAL CHANNEL  
EQUALIZATION USING  
FEED-FORWARD AND FEEDBACK COMPENSATION**

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**ABSTRACT OF THE INVENTION**

A modified gain system and method are provided for non-causal channel equalization using feed-forward and feedback compensation. The method comprises: receiving a serial data stream first bit (present) input; comparing a second bit (past) value, received prior to the first bit input, to a third bit (future) value received subsequent to the first bit input; modifying the amplitude of the first bit input to compensate for the effect of the second and third bit values being equal; and, determining the value of the first bit input by comparing the amplitude modified first bit input to a  $V_{opt}$  threshold. When only one of the second and third bit values is a "1" value, a unity amplitude modifier is supplied. When the second and third bit values are a "1", a low amplitude modifier is supplied. When the second and third bit values are a "0", a high amplitude modifier is supplied.